



**SEW  
EURODRIVE**

## **Operating Instructions**



**MOVITRAC® B**

Conversion MOVITRAC® 31C to MOVITRAC® B





## Contents

<b>1</b>	<b>General Notes</b>	<b>4</b>
1.1	How to use the operating instructions	4
1.2	Structure of the safety notes	4
1.3	Rights to claim under limited warranty	5
1.4	Exclusion of liability	5
<b>2</b>	<b>Safety Notes</b>	<b>6</b>
2.1	Preliminary information	6
2.2	General information	6
2.3	Target group	7
2.4	Designated use	7
2.5	Other applicable documentation	8
2.6	Transport	8
2.7	Installation/assembly	8
2.8	Electrical connection	9
2.9	Safe disconnection	9
2.10	Startup/operation	9
<b>3</b>	<b>Conversion</b>	<b>10</b>
3.1	Preparation	10
3.2	BG0 to BG0S	10
3.3	BG0 to BG0S with EMC module	15
3.4	BG1 to BG0L	16
3.5	BG2 to BG2S	21
<b>4</b>	<b>Startup</b>	<b>25</b>
4.1	Terminal assignment	25
4.2	Startup	27
<b>5</b>	<b>Dimensions</b>	<b>28</b>
5.1	BG0 adapter kit dimensions	28
5.2	BG1 adapter kit dimensions	28
5.3	BG2 adapter kit dimensions	29
<b>6</b>	<b>Address List</b>	<b>30</b>
	<b>Index</b>	<b>40</b>



## 1 General Notes

### 1.1 How to use the operating instructions

The operating instructions are an integral part of the product and contain important information for operation and service. The operating instructions are written for all persons who assemble, install, startup, and service this product.

The operating instructions must be legible and accessible at all times. Make sure that staff responsible for the plant and its operation, as well as persons who work independently on the unit, have read the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

### 1.2 Structure of the safety notes

The safety notes in these operating instructions are designed as follows:

Pictogram	<b>! SIGNAL WORD</b>
	<p>Type and source of danger.</p> <p>Possible consequence(s) if the safety notes are disregarded.</p> <ul style="list-style-type: none"> <li>Measure(s) to prevent the danger.</li> </ul>

Pictogram	Signal word	Meaning	Consequences if disregarded
<p>Example:</p> <p>General danger</p> <p>Specific danger, e.g. electric shock</p>	<b>! DANGER</b>	Imminent danger	Severe or fatal injuries
	<b>! WARNING</b>	Possible dangerous situation	Severe or fatal injuries
	<b>! CAUTION</b>	Possible dangerous situation	Minor injuries
	<b>STOP</b>	Possible damage to property	Damage to the drive system or its environment
	<b>TIP</b>	Useful information or tip. Simplifies the handling of the drive system.	



### 1.3 ***Rights to claim under limited warranty***

Adhering to the operating instructions is a prerequisite for fault-free operation and the fulfillment of any right to claim under warranty. Therefore, read the operating instructions before you start working with the unit.

### 1.4 ***Exclusion of liability***

You must comply with the information contained in these operating instructions to ensure safe operation of the electric motors and to achieve the specified product characteristics and performance features. SEW-EURODRIVE does not assume liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.



## 2 Safety Notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and observed. Make sure that persons responsible for the plant and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation, please contact SEW-EURODRIVE.

### 2.1 Preliminary information

The following safety notes predominantly refer to the use of frequency inverters. Additionally, when using drives with motors or gearmotors, observe the corresponding safety notes in the respective operating instructions.

Please also observe the supplementary safety notes in the individual sections of this publication.

### 2.2 General information



#### **DANGER**

During operation, frequency inverters can have live, bare parts according to their degree of protection.

Severe or fatal injuries.

- All work related to transportation, storage, setup/mounting, connection, startup, maintenance and repair may only be carried out by qualified personnel, in strict observation of:
  - The relevant detailed operating instructions
  - The warning and safety signs on the motor/gearmotor
  - All other project planning documents, operating instructions and wiring diagrams related to the drive
  - The specific regulations and requirements for the system
  - The national/regional regulations governing safety and the prevention of accidents
- Never install damaged products.
- Immediately report any damages to the shipping company.

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property.

This document includes further information.



## **2.3 Target group**

Any mechanical work may only be performed by adequately qualified personnel. Qualified personnel in this context are persons who are familiar with the setup, mechanical installation, trouble shooting and maintenance for this product. Further, they are qualified as follows:

- Training in mechanical engineering, e.g. as a mechanic or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

Any electronic work may only be performed by adequately qualified electricians. Qualified electricians in this context are persons who are familiar with the electronic installation, startup, trouble shooting and maintenance for this product. Further, they are qualified as follows:

- Training in electrical engineering, e.g. as an electrician or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

All work in further areas of transportation, storage, operation and waste disposal may be carried out only by persons who are trained appropriately.

## **2.4 Designated use**

Frequency inverters are components for controlling asynchronous AC motors. Frequency inverters are components intended for installation in electrical systems or machines. Never connect capacitive loads. Operation with capacitive loads results in over voltages and may destroy the unit.

The following standards apply, if the frequency inverters are marketed in the EU/EFTA:

- In case of installation in machines, startup of the drive inverters (meaning the start of proper use) is prohibited until it is determined that the machine meets the requirements stipulated in the EC Directive 98/37/EC (machine directive); observe EN 60204.
- Startup (i.e. the start of designated use) is only permitted under observance of the EMC (2004/108/EC) directive.
- The frequency inverters comply with the requirements of the Low Voltage Directive 2006/95/EC. The harmonized standards of the EN 61800-5-1/DIN VDE T105 series in connection with EN 60439-1/VDE 0660 part 500 and EN 60146/VDE 0558 are applied to these frequency inverters.

Observe the technical data and the connection requirements specified on the nameplate and the operating instructions.

### **2.4.1 Safety functions**

Frequency inverters from SEW-EURODRIVE must not perform any safety functions unless the inverters are subordinate to other safety systems.

Use higher-level safety systems to ensure protection of equipment and personnel.



## 2.5 Other applicable documentation

Observe the following publication for a conversion from MOVITRAC® 31C to MOVITRAC® B:

- MOVITRAC® B operating instructions

This documentation is available for download on the SEW-EURODRIVE web site.

## 2.6 Transport

Inspect the shipment for any damage that may have occurred in transit as soon as you receive the delivery. Inform the shipping company immediately. It may be necessary to preclude startup.

## 2.7 Installation/assembly

The units must be installed and cooled according to the regulations and specifications in this documentation.

Protect the frequency inverters from excessive strain. Do not twist any components and do not modify the insulation spaces. Do not touch any electronic components or contacts.

Frequency inverters contain components that can easily be damaged by electrostatic energy and improper handling. Electric components must not be mechanically damaged or destroyed.

The following applications are prohibited unless the unit is explicitly designed for such use:

- Use in potentially explosive atmospheres.
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, radiation, etc. (frequency inverter may only be operated in climate class 3K3 to EN 60721-3-3)
- Use in non-stationary applications which are subject to mechanical vibration and impact loads in excess of the requirements in EN 61800-5-1.



## **2.8 Electrical connection**

Observe the applicable national accident prevention guidelines when working on live frequency inverters (e.g. BGV A3 for Germany).

During installation, observe the specifications regarding cable cross sections, fusing and protective conductor connection. This publication contains additional information.

In this documentation, you will find notes on EMC compliant installation, such as shielding, grounding, arrangement of filters and routing of lines. The manufacturer of the system or machine is responsible for maintaining the limits established by EMC legislation.

Protective measures and protection devices must comply with the regulations in force (e.g. EN 60204 or EN 61800-5-1).

Ground the unit.

## **2.9 Safe disconnection**

The unit meets all requirements for safe disconnection of power and electronic connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for safe disconnection.

## **2.10 Startup/operation**

Systems with integrated frequency inverters must be equipped with additional monitoring and protection devices, as applicable, according to the relevant safety guidelines and regulations, such as legislation governing technical equipment, accident prevention regulations, etc.

Do not touch live components or power connections until 10 minutes after disconnecting the frequency inverters from the supply voltage because there may still be some charged capacitors. Observe the corresponding labels on the frequency inverter.

Keep all covers and doors closed during operation.

The fact that the status LED and other display elements are no longer illuminated does not indicate that the unit has been disconnected from the power supply and no longer carries any voltage.

Mechanical blocking or internal safety functions of the unit can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive restarting automatically. If, for safety reasons, this is not permitted for the driven machine, disconnect the unit from the supply system before correcting the error.



### 3 Conversion

#### 3.1 Preparation

	<p><b>DANGER</b></p> <p>Plant not de-energized. Severe or fatal injuries from electric shock.</p> <ul style="list-style-type: none"> <li>• Disconnect the inverter and the control cabinet prior to the conversion procedure.</li> <li>• Secure the plant against unintended restart.</li> </ul>
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#### 3.2 BG0 to BG0S

##### 3.2.1 Disassembly of MOVITRAC® 31C

###### Signal lines

- Pull off the 5-pin plug connector X2 and the 12-pin plug connector X3 upwards. See following figure.
- Be careful in order not to damage the connection wires.



1391303435

###### Power cable

The cables for power supply, motor and braking resistor are connected to the unit via terminal X1.

	<p><b>TIP</b></p> <p>SEW-EURODRIVE recommends marking the wires before disconnecting them. Thus you will prevent faulty wiring.</p>
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- Disconnect the cables.

**Disassembly**

The MOVITRAC® 31C is attached to the back of the control cabinet via 2 screws.

- Loosen the retaining screws and then remove the MOVITRAC® 31C.

**3.2.2 Mounting the adapter plate**

- Use the two provided retaining screws to mount the adapter plate to the back panel of the control cabinet.
- Use the retaining bores for this purpose. The bore pattern is the same as for MOVITRAC® 31 C.

**3.2.3 Installation of MOVITRAC® B**

- Use the two provided retaining screws to attach the MOVITRAC® B to the adapter plate. See following figure.

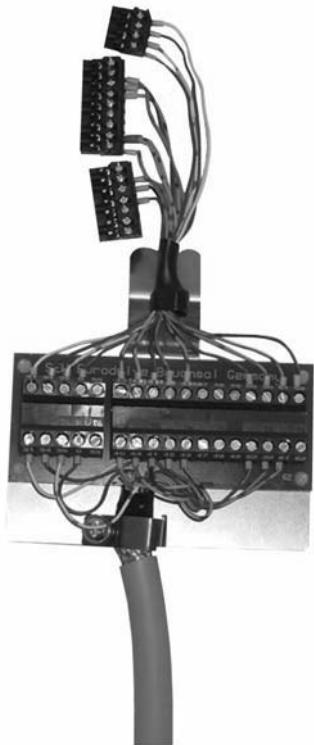


1392977547

- Use the pre-wired adapter board to connect the signal cables to MOVITRAC® B.



- Connect the signal plugs to the respective 5-pole and 12-pole socket contacts (push from the top). See following figure.

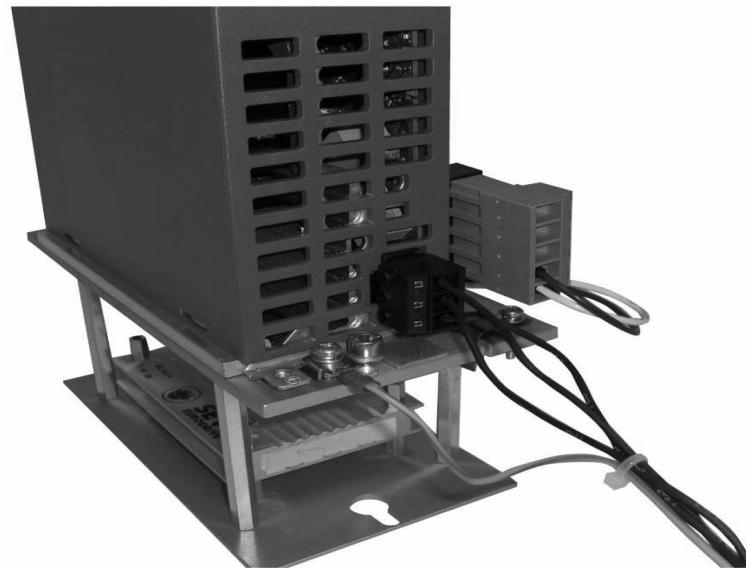


1392980747

- If the signal cable shield of MOVITRAC® 31C has been connected to ground, you have to connect the MOVITRAC® B shield to the retaining plate over a large surface area using a grounding clamp.
- Connect the L1, L2, L3 supply cables to the 3-pole supply connector of the MOVITRAC® B.



- Then plug the connector into the 3-pole socket X1 of the MOVITRAC® B. See following figure.



1393342603

- Connect the motor supply U/V/W to the 5-pin coupler. Observe the assignment U/V/W.
- If the motor cable shield of MOVITRAC® 31C has been connected to ground, you have to connect the MOVITRAC® B shield to the adapter plate over a large surface area using a grounding clamp. See following figure.



1393345803



- If the MOVITRAC® 31C has been equipped with an external braking resistor, connect it to the 5-pin coupler as well (terminals R+ and R-). If the MOVITRAC® 31C has not been equipped with an external braking resistor, use the built-in brake resistor of the adapter. In this case, route the wires through the bore and connect them to the 5-pin coupler.

	<p><b>STOP</b></p> <p>Observe the permitted minimum resistance for MOVITRAC® B.</p> <p>Consequences if disregarded: Defective power section.</p> <ul style="list-style-type: none"> <li>• For the values, refer to the "MOVITRAC® B" system manual.</li> </ul>
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- Plug the 5-pole multi-connector cable into the MOVITRAC® B and into the coupler.
- Insert the adapter board into the slot of the MOVITRAC® B and secure the connection with a screw.
- Then plug the 3 signal connectors into the respective sockets of the MOVITRAC® B. See following figure.



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### 3.3 BG0 to BG0S with EMC module

The EMC module FKE12B can be used for the adapter kit.

The following modifications are required for the adapter kit:

- Replace the 4 spacer bolts with the provided shorter ones.
- Remove the set of cables mounted on the adapter kit.
- Use the 3-pin cable of the cable set for the supply system connection.
- Connect the provided connector to the 3-pin cable and the supplied coupler to the supply cable.
- Connect the cables of the braking resistor to the 5-pin motor connector of the MOVITRAC® B. See following figure.



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- Mount the EMC module and the MOVITRAC® B to the adapter kit.
- Connect the MOVITRAC® B to the supply system and the motor via the EMC module.



### 3.4 BG1 to BG0L

#### 3.4.1 Disassembly of MOVITRAC® 31C

*Signal lines*

- Pull off the 5-pin plug connector X2 and the 12-pin plug connector X3 upwards. See following figure.
- Be careful in order not to damage the connection wires.



1393352843

*Power cable*

The cables for power supply, motor and braking resistor are connected to the unit via terminal X1.

	<p><b>TIP</b></p> <p>SEW-EURODRIVE recommends marking the wires before disconnecting them. Thus you will prevent faulty wiring.</p>
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- Disconnect the cables.

*Disassembly*

The MOVITRAC® 31C is attached to the back of the control cabinet via 4 screws.

- Loosen the retaining screws and then remove the MOVITRAC® 31C.

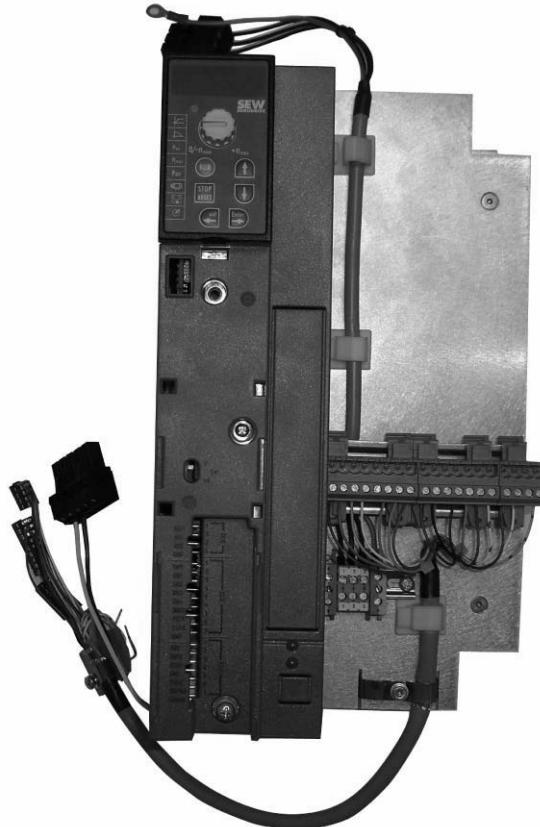
#### 3.4.2 Mounting the adapter plate

- Use the provided retaining screws to mount the adapter plate to the back panel of the control cabinet.
- Use the 4 retaining bores for this purpose. The bore pattern is the same as for MOVITRAC® 31 C.



### 3.4.3 Installation of MOVITRAC® B

- Use the two provided retaining screws to mount the MOVITRAC® B to the adapter plate. See following figure.



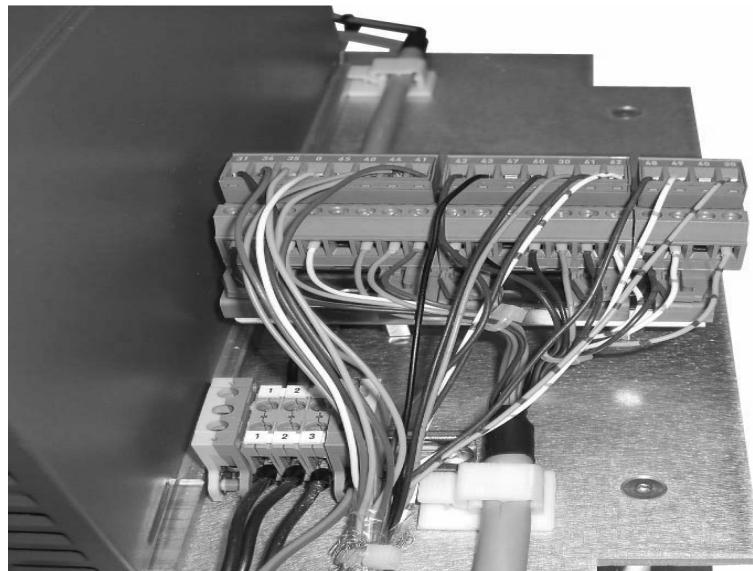
1393448331

- Use the pre-wired adapter sockets to connect the signal cables to MOVITRAC® B.



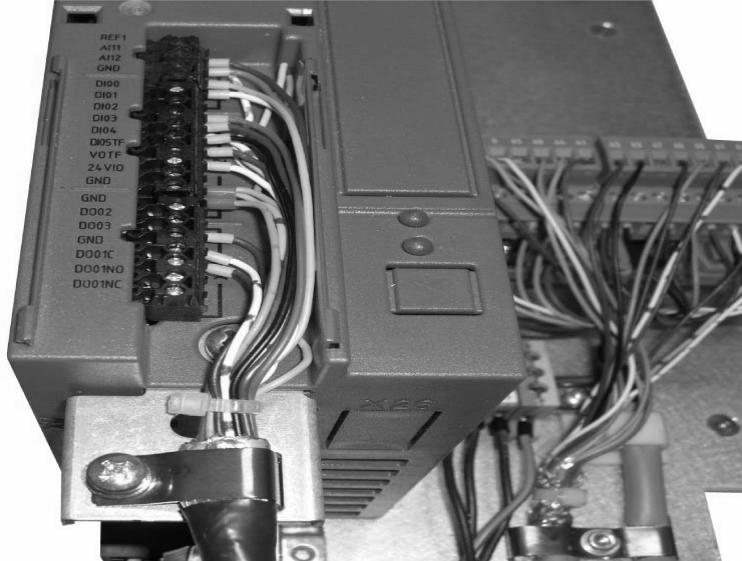
## Conversion BG1 to BG0L

- Connect the signal plugs of the MOVITRAC® 31C to the corresponding sockets. See following figure.



1393452171

- Connect the plugs of the MOVITRAC® 31C to the corresponding plugs of the MOVITRAC® B. See following figure.

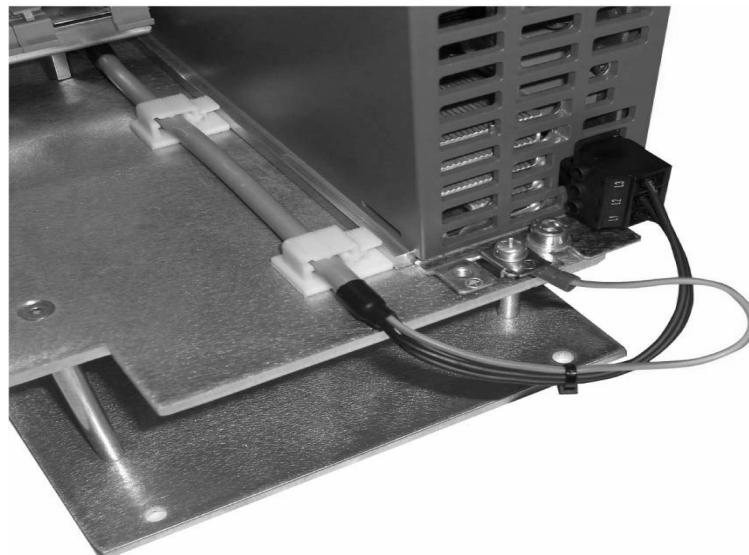


1393455371

- If the signal cable shield of MOVITRAC® 31C has been connected to ground, you have to connect the MOVITRAC® B shield to the retaining plate over a large surface area using a grounding clamp.



- Connect the L1, L2, L3 supply cables to the 3-pin supply connector of the MOVITRAC® B.
- Then plug the connector into the 3-pole socket X1 of the MOVITRAC® B. See following figure.



1393574411

- Connect the motor supply U/V/W to the 5-pin coupler. Observe the assignment U/V/W.
- If the motor cable shield of MOVITRAC® 31C has been connected to ground, you have to connect the MOVITRAC® B shield to the adapter plate over a large surface area using a grounding clamp. See following figure.



1393578123



- If the MOVITRAC® 31C has been equipped with an external braking resistor, connect it to the 5-pin coupler as well (terminals R+ and R-). If the MOVITRAC® 31C has not been equipped with an external braking resistor, use the built-in brake resistor of the adapter. In this case, route the wires through the bore and connect them to the 5-pin coupler.

	<p><b>STOP</b></p> <p>Observe the permitted minimum resistance for MOVITRAC® B.</p> <p>Consequences if disregarded: Defective power section.</p> <ul style="list-style-type: none"><li>• For the values, refer to the "MOVITRAC® B" system manual.</li></ul>
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### 3.5 BG2 to BG2S

#### 3.5.1 Disassembly of MOVITRAC® 31C

##### Signal lines

- Pull off the 5-pin plug connector X2 and the 12-pin plug connector X3 upwards. See following figure.
- Be careful in order not to damage the connection wires.



1393352843

##### Power cable

The cables for power supply, motor and braking resistor are connected to the unit via terminal X1.

	<b>TIP</b> SEW-EURODRIVE recommends marking the wires before disconnecting them. Thus you will prevent faulty wiring.
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- Disconnect the cables.

##### Disassembly

The MOVITRAC® 31C is attached to the back of the control cabinet via 4 screws.

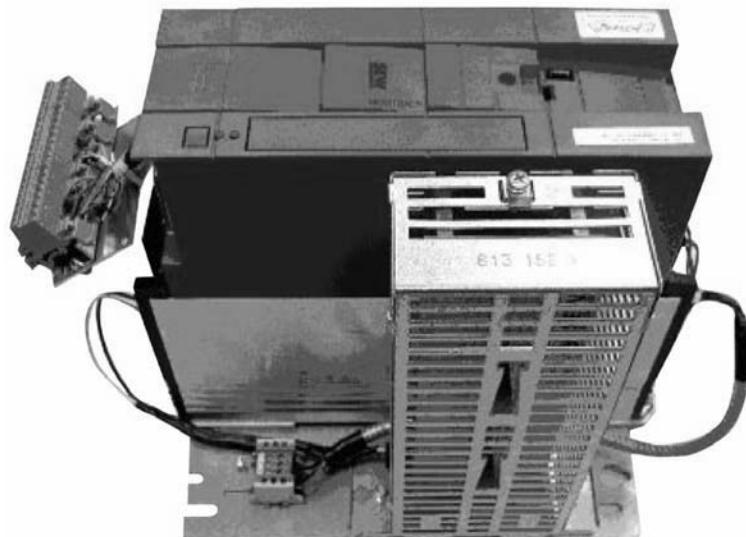
- Loosen the retaining screws and then remove the MOVITRAC® 31C.

**3.5.2 Mounting the adapter plate**

- Use the provided retaining screws to mount the adapter plate to the back panel of the control cabinet.
- Use the 4 retaining bores for this purpose. The bore pattern is the same as for MOVITRAC® 31 C.

**3.5.3 Installation of MOVITRAC® B**

- Use the provided retaining screws to mount the MOVITRAC® B to the adapter plate.
- Mount the provided braking resistor to the adapter plate. See following figure.

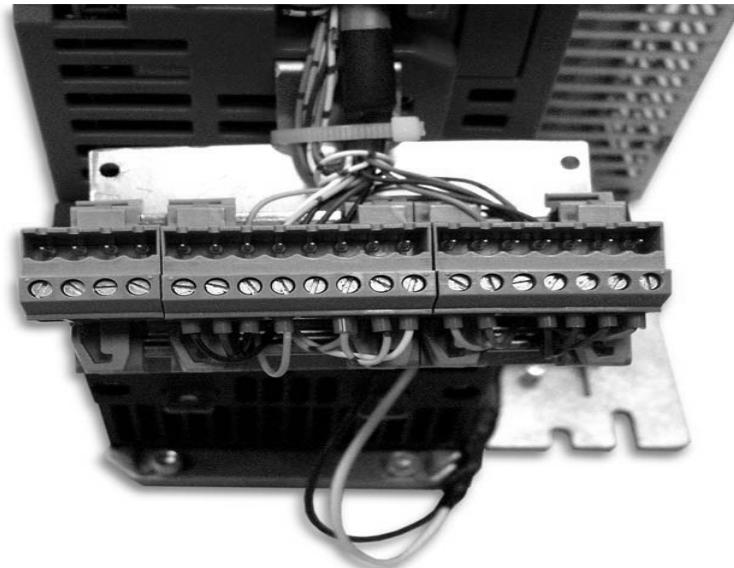


1654544139

- Use the pre-wired adapter sockets to connect the signal cables to MOVITRAC® B.
- Connect the socket line plugs of the MOVITRAC® 31C to the corresponding socket panels.



- If the signal cable shield of MOVITRAC® 31C has been connected to ground, you have to connect the MOVITRAC® B shield to the retaining plate over a large surface area using a grounding clamp.



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- Connect the terminal block supply cables to terminals 1/L1 / 2/L2 / 3/L3 of the MOVITRAC® B. See following figure.

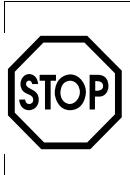


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- Connect the U/V/W motor cable to terminals 4/U / 5/V / 6/W of the MOVITRAC® B.



- If the MOVITRAC® 31C has been equipped with an external braking resistor, connect it to the 5-pin coupler as well (terminals R+ and R-). If the MOVITRAC® 31C has not been equipped with an external braking resistor, use the built-in brake resistor of the adapter.

	<p><b>STOP</b></p> <p>Observe the permitted minimum resistance for MOVITRAC® B.</p> <p>Consequences if disregarded: Defective power section.</p> <ul style="list-style-type: none"><li>• For the values, refer to the "MOVITRAC® B" system manual.</li></ul>
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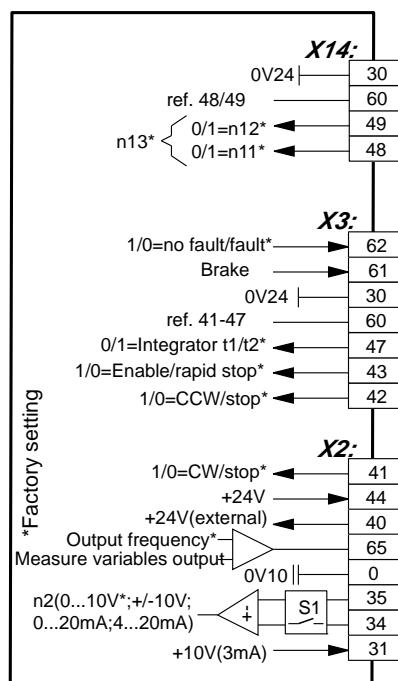


## 4 Startup

### 4.1 Terminal assignment

#### 4.1.1 Standard unit

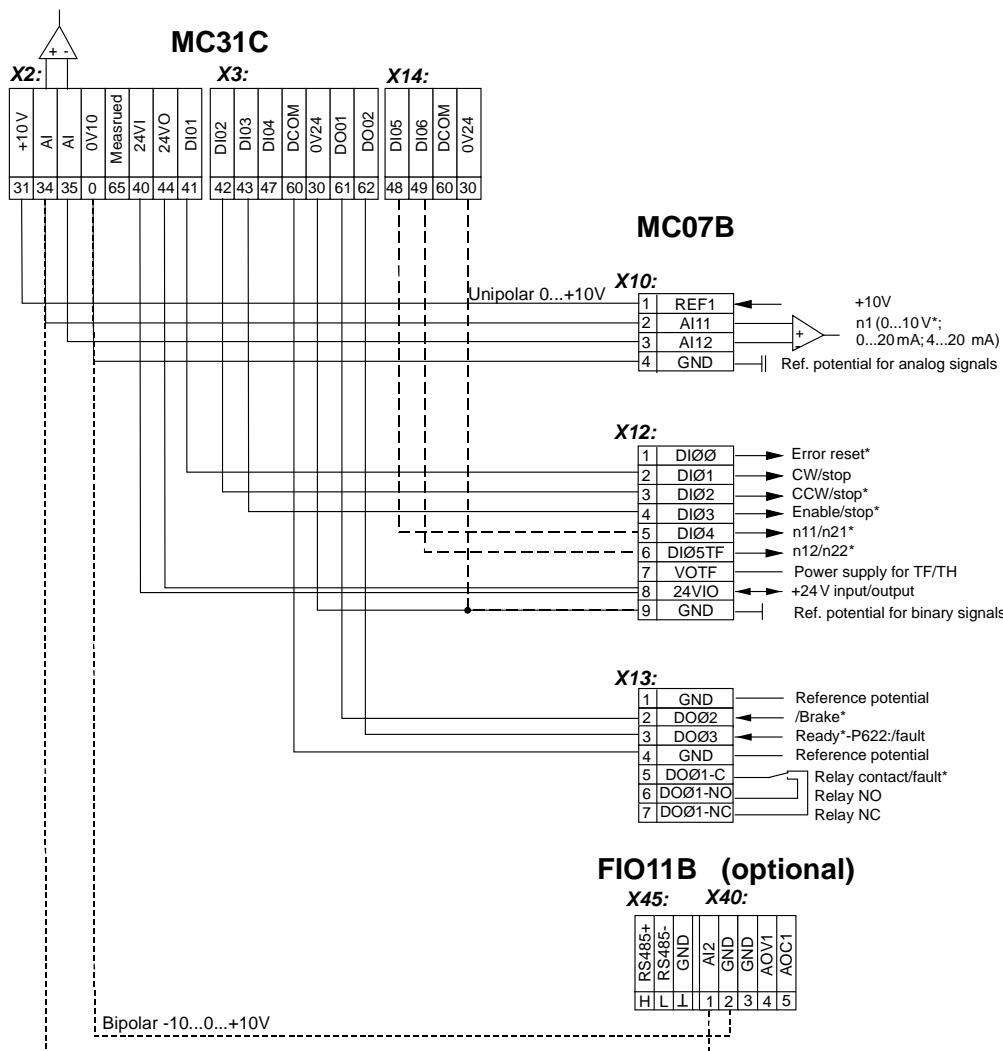
The following figure is based on the terminal assignment as stated in the operating instructions (default settings are marked with a \*). For better orientation, the terminals of the MOVITRAC® 31C are illustrated horizontally (corresponds to the actual view).



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The rewiring diagram refers to the standard factory setting of the old and the new unit. Observe any alterations regarding the parameterization.



1365451787

#### 4.1.2 Terminal X14 option

MC31C in BG 0 is not equipped with a terminal X14, terminals 48 and 49 for fixed set-points are integrated in X3 instead.

One of the following options can be plugged in (as X21 extension) instead of the X14 board: FEN31C, FPI31C, FIT31C.

#### 4.1.3 Potential isolation of the terminals

The MOVITRAC® 31C reference potentials are not connected to GND. A potential connection is established by connecting terminals X14:60 and X14:30.



#### 4.1.4 Ramp switch-over

MOVITRAC® 31C is not equipped with terminal X3:47 t1/t2 ramp switchover. It cannot be parameterized to a digital input. With the second motor parameter set, you can achieve the function with the following conditions:

- Switchover only via parameter set switchover in "No enable" state
- Startup for first and second parameter set executed
- Parameterization of the ramps and speeds in both parameter sets.

#### 4.1.5 DC 24 V terminal

One distinctive feature of the MOVITRAC® B is the DC 24 V terminal X12:8. You can use this terminal to operate the MC07B with backup voltage or to supply other consumers with 24 V from MOVITRAC® B. The MOVITRAC® B can provide 50 mA via terminal X12:8 (MOVITRAC® 31C = 250 mA via X2:44). Use an external DC 24 V supply if the demand is higher.

#### 4.1.6 Error messages

Note that, for MOVITRAC® 31C, the error message X3:62 is assigned to a digital output. For the MOVITRAC® B, the error message is implemented as a relay contact. This is why you should rather use terminal X13:3 (DO03). Next, parameter P622 must be set to */Fault* using the FBG keypad or MOVITOOLS® MotionStudio.

#### 4.1.7 Analog input

Note that the analog input of the basic MOVITRAC® B unit can only be used for 0 – 10 V and 0(4) – 20 mA.

Use the analog module FIO11B for operation with –10 V – 0 – +10 V.

	<b>TIP</b>
	For better orientation, the abbreviations in the figures referring to MOVITRAC® 31C are the same as used for MOVITRAC® A, MOVITRAC® B and MOVIDRIVE®. Refer to the operating instructions for the exact designations for MOVITRAC® 31C.

## 4.2 Startup

- Now you can restart the cabinet/plant.
- Startup the MOVITRAC® B as described in the operating instructions.
- The terminal assignment must correspond to the MOVITRAC® 31C assignment. Refer to the rewiring diagram of the adapter board for information on the terminal assignment.

<i>kVA</i>	<i>n</i>
<i>f</i>	
<i>i</i>	
<i>P</i>	<i>Hz</i>

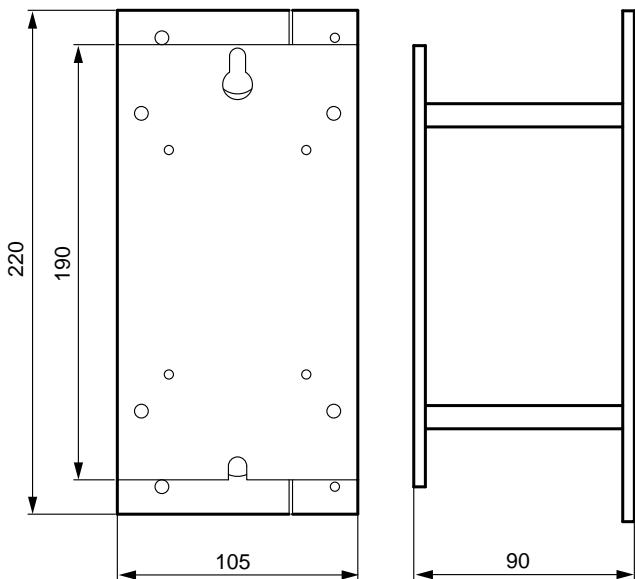
## Dimensions

### BG0 adapter kit dimensions

## 5 Dimensions

### 5.1 BG0 adapter kit dimensions

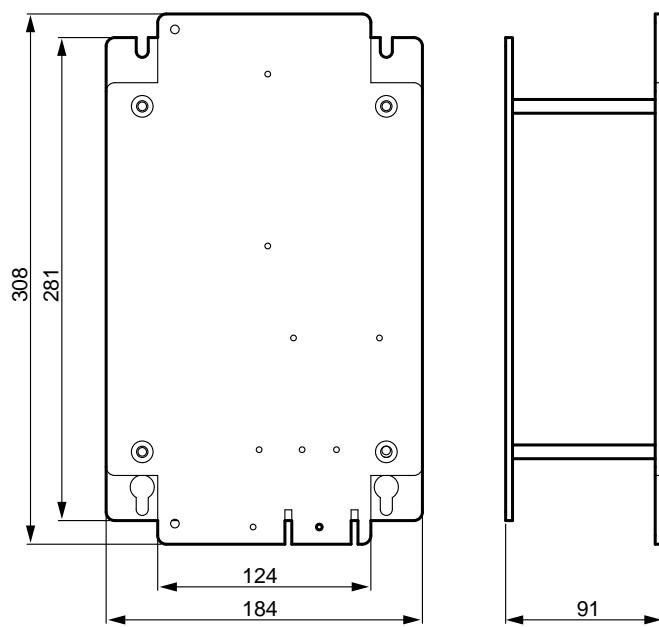
The height of the MOVITRAC® B is 163.5 mm.



1626675723

### 5.2 BG1 adapter kit dimensions

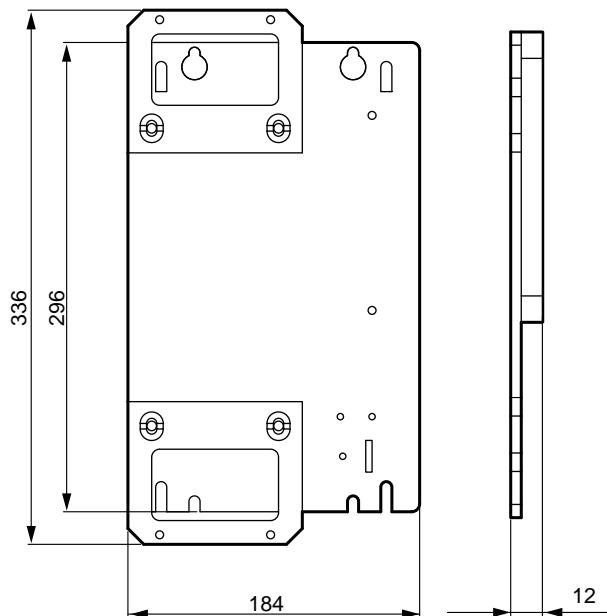
The height of the MOVITRAC® B is 163.5 mm.



1626678923

### 5.3 BG2 adapter kit dimensions

The height of the MOVITRAC® B is 238 mm. The height of the assembled braking resistor is 258 mm.



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### Index

#### A

Adapter plate	
BG0 to BG0S	11
BG1 to BG0L	16
BG2 to BG2S	22
Analog input	27

#### B

BG0	
Adapter kit dimensions	28
Disassembly of MOVITRAC® 31C	10
Installation of MOVITRAC® B	11
BG1	
Adapter kit dimensions	28
Disassembly of MOVITRAC® 31C	16
Installation of MOVITRAC® B	17
BG2	
Adapter kit dimensions	29
Disassembly of MOVITRAC® 31C	21
Installation of MOVITRAC® B	22

#### C

Conversion	
BG0 to BG0S	10
BG0 to BG0S with EMC module	15
BG1 to BG0L	16
BG2 to BG2S	21
Preparation	10

#### D

DC 24 V terminal	27
Dimensions of adapter kit	
BG0	28
BG1	28
BG2	29
Disassembly of MOVITRAC® 31C	
BG0 to BG0S	10
BG1 to BG0L	16
BG2 to BG2S	21

#### E

Error messages	27
----------------	----

#### G

General notes	4
---------------	---

#### I

Input, analog	27
Installation of MOVITRAC® B	
BG0 to BG0S	11
BG1 to BG0L	17
BG2 to BG2S	22

#### M

Malfunction messages	27
Mounting	
Adapter plate BG0	11
Adapter plate BG1	16
Adapter plate BG2	22

#### N

Notes	
General	4
Safety	4

#### O

Option terminal X14	26
---------------------	----

#### P

Potential connection	26
Preparations for the conversion	10

#### R

Ramp switch-over	27
Rewiring	26
Rights to claim under limited warranty	5

#### S

Safety notes	6
Structure	4
Startup	25, 27

#### T

Terminal assignment	25
Terminal DC 24 V	27
Terminal X14	26

#### W

Wiring	26
--------	----